

COMPLEMENTARY SILICON POWER TRANSISTORS

...designed for various specific and general purpose application such as; output and driver stages of amplifiers operating at frequencies from DC to greater than 1.0MHz; series, shunt and switching regulators; low and high frequency inverters/converters and many others.

FEATURES:

- * NPN Complement to D45H PNP
- * Very Low Collector Saturation Voltage
- * Excellent Linearity
- * Fast Switching
- * PNP Values are Negative, Observe Proper Polarity.

Boca Semiconductor Corp.

<http://www.bocasemi.com>

NPN
D44H
Series

PNP
D45H
Series

10 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
30-80 VOLTS
50 WATTS

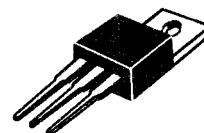
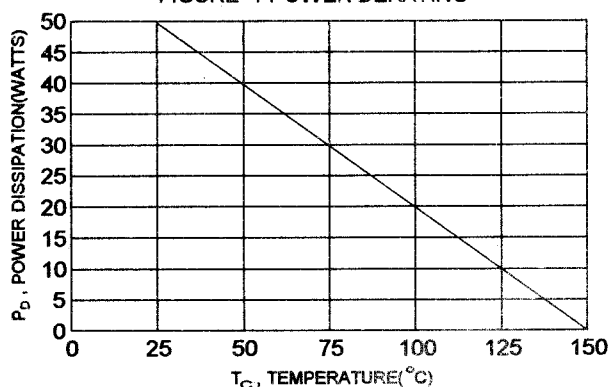
MAXIMUM RATINGS

Characteristic	Symbol	D44H1,2 D45H1,2	D44H4,5 D45H4,5	D44H7,8 D45H7,8	D44H10,11 D45H10,11	Unit
Collector-Emitter Voltage	V_{CEO}	30	45	60	80	V
Collector-Emitter Voltage	V_{CES}	30	45	60	80	V
Emitter-Base Voltage	V_{EBO}	5				V
Collector Current - Continuous Peak	I_C I_{CM}	10 20				A
Base Current	I_B	2				A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 0.4				W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150				$^\circ\text{C}$

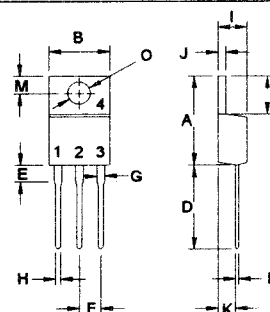
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$

FIGURE -1 POWER DERATING



TO-220



PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR (CASE)

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ($I_C = 30\text{mA}$, $I_B = 0$)	D44H1,2 D44H4,5 D44H7,8 D44H10,11	D45H1,2 D45H4,5 D45H7,8 D45H10,11	$V_{CE(sus)}$	30 45 60 80		V
Collector-Emitter Cutoff Current ($V_{CE} = 30\text{V}$, $V_{BE} = 0$) ($V_{CE} = 45\text{V}$, $V_{BE} = 0$) ($V_{CE} = 60\text{V}$, $V_{BE} = 0$) ($V_{CE} = 80\text{V}$, $V_{BE} = 0$)	D44H1,2 D44H4,5 D44H7,8 D44H10,11	D45H1,2 D45H4,5 D45H7,8 D45H10,11	I_{CES}		10 10 10 10	μA
Emitter-Base Cutoff Current ($V_{BE} = 5\text{V}$, $I_C = 0$)			I_{EBO}		100	μA

ON CHARACTERISTICS(1)

DC Current Gain ($I_C = 2.0\text{A}$, $V_{CE} = 1.0\text{V}$) ($I_C = 4.0\text{A}$, $V_{CE} = 1.0\text{V}$)	D44H1,4,7,10 /D45H1,4,7,10 D44H2,5,8,11 /D45H2,5,8,11 D44H1,4,7,10 /D45H1,4,7,10 D44H2,5,8,11 /D45H2,5,8,11	h_{FE}	35 60 20 40		
Collector-Emitter Saturation Voltage ($I_C = 8.0\text{A}$, $I_B = 800\text{mA}$) ($I_C = 8.0\text{A}$, $I_B = 400\text{mA}$)	D44H1,4,7,10 /D45H1,4,7,10 D44H2,5,8,11 /D45H2,5,8,11	$V_{CE(sat)}$		1.0 1.0	V
Base-Emitter Saturation Voltage ($I_C = 8.0\text{A}$, $I_B = 800\text{mA}$)	ALL Devices	$V_{BE(sat)}$		1.5	V

DYNAMIC CHARACTERISTICS

Current-Gain Bandwidth Product (2) ($I_C = 500\text{mA}$, $V_{CE} = 10\text{V}$, $f = 0.5\text{MHz}$)	D44H Series D45H Series	f_T	15 12		MHz
Output Capacitance ($V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1.0\text{MHz}$)	D44H Series D45H Series	C_{ob}	220 400		PF

SWITCHING CHARACTERISTICS

Rise Time	$I_C = 5\text{A}$, $I_{B1} = -I_{B2} = 500\text{mA}$	D44H Series D45H Series	t_r		0.5 0.6	μs
Storage Time		D44H Series D45H Series	t_s		1.0 1.2	μs
Fall Time		D44H Series D45H Series	t_f		0.4 0.5	μs

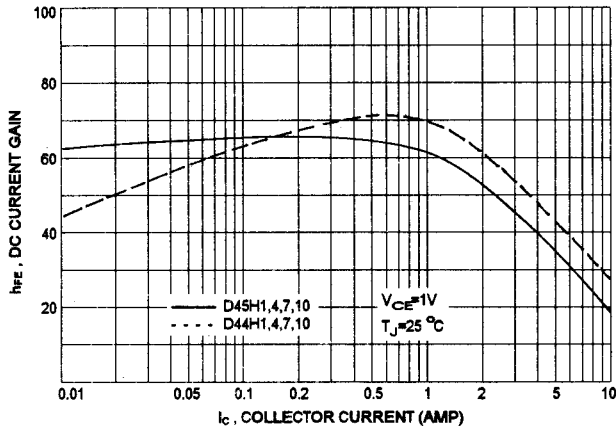
(1) Pulse Test: Pulse width = 300 μs , Duty Cycle $\leq 2.0\%$ (2) $f_T = |h_{fe}| \cdot f_{test}$

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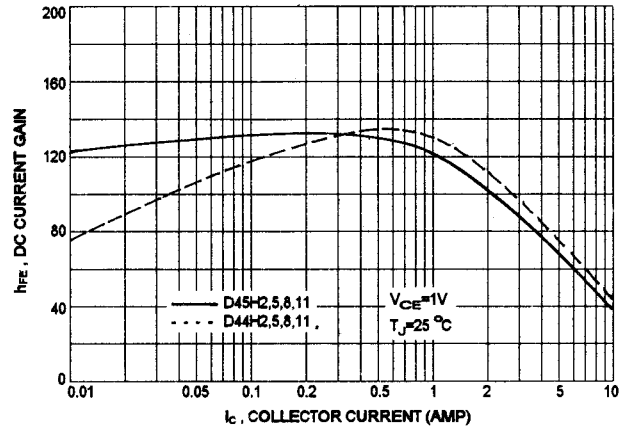
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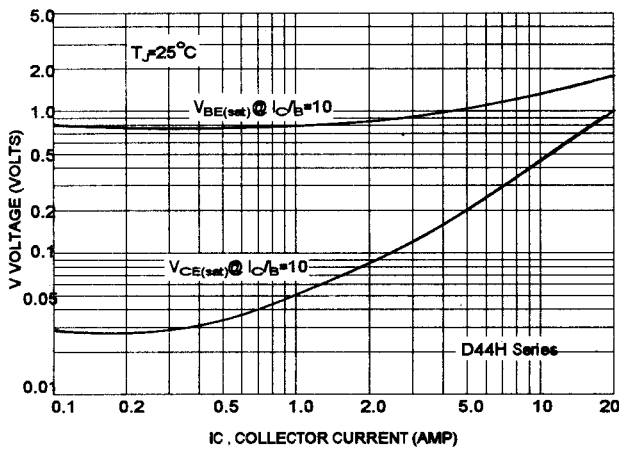
DC CURRENT GAIN



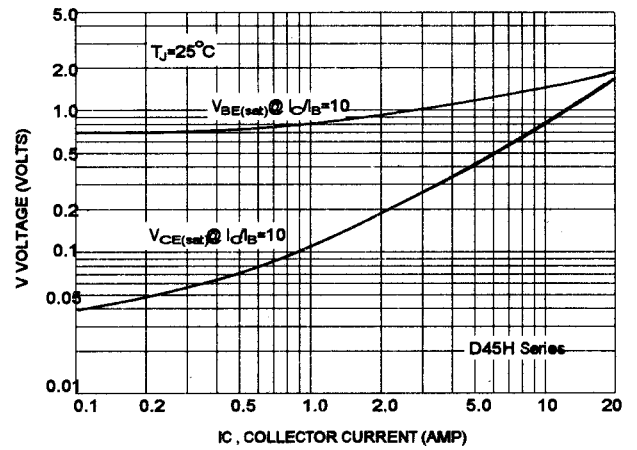
DC CURRENT GAIN



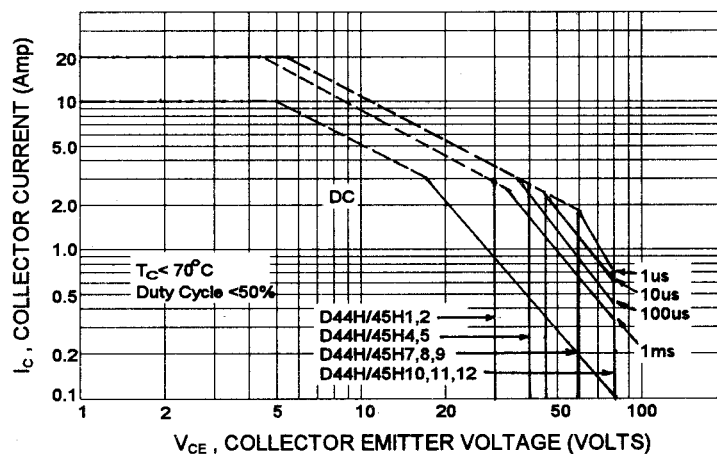
"ON" VOLTAGES



"ON" VOLTAGES



FORWARD BIAS SAFE OPERATING AREA



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BSC

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